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that the following transformations may be operated, in general, upon either the ester compound 3390 itself or upon the individually resolved alcohol and carboxylic acid hydrolysis products of the ester parent compound.

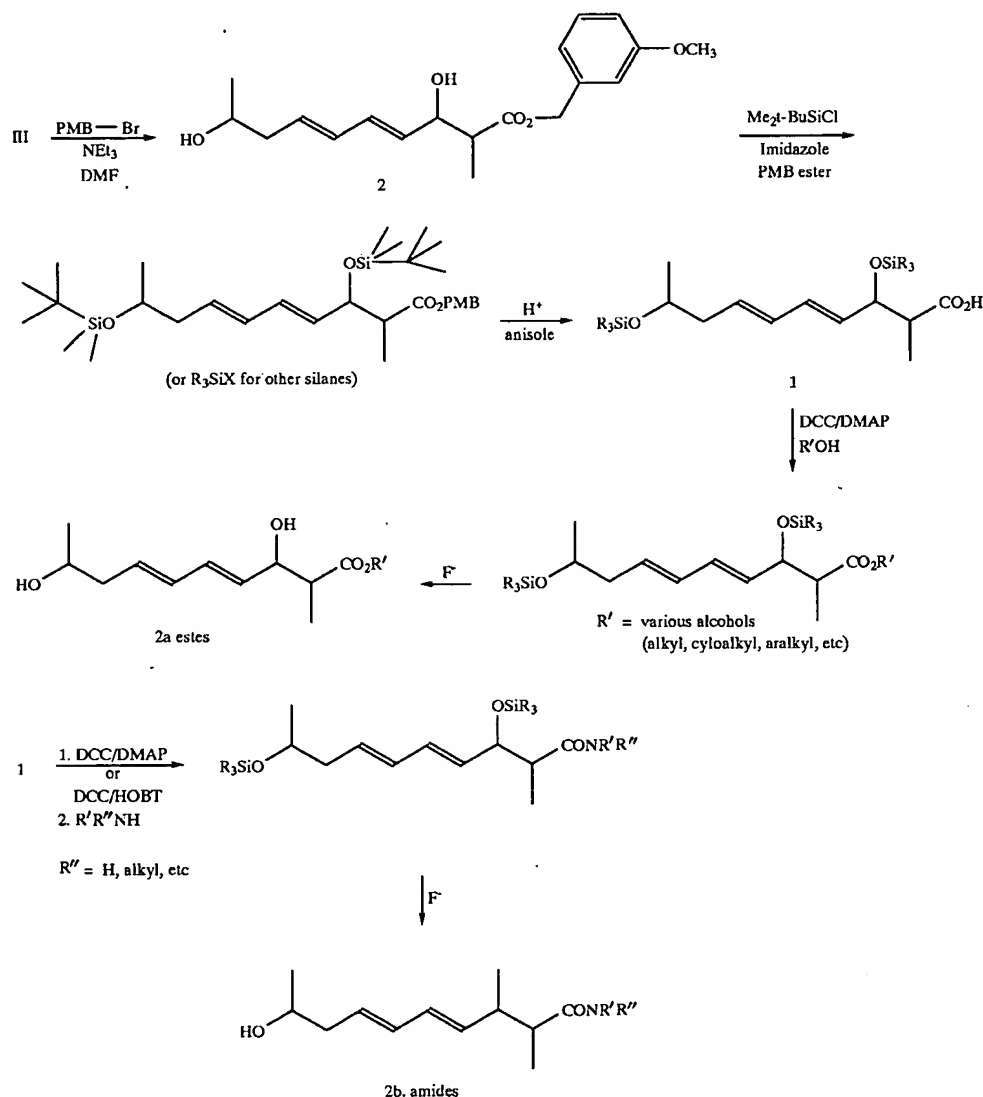
Derivatization of the hydroxyl group includes alkylation, reduction, oxidation, esterification, and silylation. Derivatization of the carboxylic acid group includes forming both esters and amides. A naturally-occurring amino acid includes the 20 common  $\alpha$ -amino acids (Gly, Ala, Val, Leu, Ile, Ser, Thr, Asp, Asn, Lys, Glu, Gln, Arg, His, Phe, Cys, Trp, Tyr, Met and Pro), and other amino acids that are natural products, such as norleucine, ethylglycine, ornithine,

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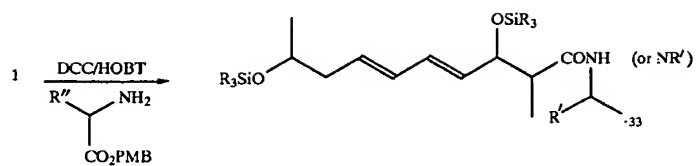
methylbutenylmethylthreonine, and phenylglycine. Examples of amino acid side chains include H (glycine), methyl (alanine),  $-(CH_2-(C=O)-NH_2)$  (asparagine),  $-CH_2-SH$  (cysteine), and  $-CH(OH)CH_3$  (threonine).

Regarding the sesquiterpenoid portion, a wide variety of carboxylic acids or activated acyl groups can be reacted to form esters.  $RCO_2H$ , wherein R is alkyl, cycloalkyl, arylalkyl, branched arylalkyl, alkyl, amino acid esters with N-protection such as  $RO(C=O)NH-$  and  $R-(C=O)-NH-$ . The extracyclic vinyl and enone groups can also be derivatized. These and other transformations are provided in the following schemes.

SCHEME 1



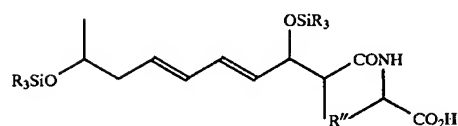
## SCHEME 2



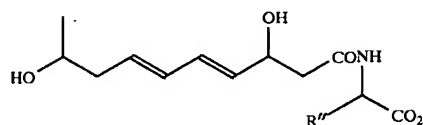
(or other esters in  
place of PMB)

(or  $\text{R}-\text{CH}(\text{NHR}')-\text{CO}_2\text{PMB}$ )

$\downarrow \text{H}^+/\text{anisole}$

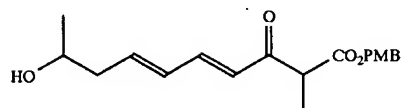


$\downarrow \text{F}^-$



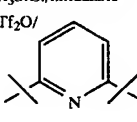
2b. Amides w/amino acids

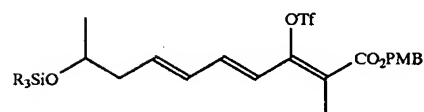
2  $\xrightarrow[\text{acetone}]{\text{MnO}_2}$



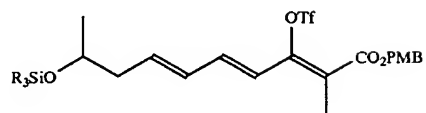
Selective oxidation

1.  $\text{R}_3\text{SiCl}/\text{imidazole}$

2.  $\text{Tf}_2\text{O}/$  



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